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A Survey of IATUL for Serials Automation - Future Prospects

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Abstract

Developments in serials automation since the first batch-produced catalogues are briefly surveyed. The reason for early failures are identified and it is shown how the elimination of the problems encountered has been possible through inter-library cooperation together with enhancements in computer systems reliability. It is apparent that many university libraries in North America now have successful serials automation systems in operation.

In order to assess the situation in Europe and the rest of the world a questionnaire was sent to all IATUL members in February 1983 and it elicited a 53% response. The results are tabulated to show the range of size of serials collections, nature of catalogue maintained and the extent of automation. Over half of the libraries use computers but the majority of installations are more than four years old. Automated cataloguing is the most common feature reported and relatively few libraries offer on-line facilities to enable readers to make better use of the serials collection. In conclusion an analysis is given of the facilities sought in a more comprehensive system and it is suggested that the generation of microprocessors now coming on the market in the West may well prove suitable within the imposed financial constraints.

1. Introduction

Until recently, it was generally thought that it was not advantageous or cost-effective to automate the full processes for serials handling in a research library. The possible exception to this general conclusion was a very large library already operating an automated system for monographic accessions and cataloguing. Early attempts to automate serials processing were successful only to a limited extent and then were generally not developed.[1,2] A notable exception was the system developed at the Biomedical Library of UCLA "BALLOTS".[3]

The main reasons for the failure to produce an efficient system and maintain it operationally were:

(1) The high cost of creating and maintaining a database of information on the serial parts relative to the value of this information for daily use.

(2) The high cost of security measures to protect the database from corruption.

(3) The unreliability of computer mainframe systems and the consequent lack of confidence on the part of library staff.

(4) The unfamiliarity of library staff with the specialized communication protocols commonly employed in the man-machine dialogue of a conventional computer system.

Librarians (and others) argued that serials automation beyond the stage of the machine-readable catalogue would eventually be an essential facility. This would be an inevitable result of rising labour costs and an associated fall in the cost of providing and maintaining computer hardware. Thus, the simple equation for cost-effectiveness would eventually be satisfied.

2. Operational Systems

During the past five years automated serials handling systems have been developed and offered on subscription by several library co-operative automation groups, particularly OCLC, RLIN, UTLAS, DOBIS, and WLN.[4,5,6,7,8] These are not very extensively used except for the production of serials listings. The situation is changing and it may be that when this paper is published they will all be operational and providing a service to their members. However, on last enquiring we were informed that UTLAS,[9] DOBIS[10] and WLN[11] had not yet started to implement serials handling, and no date had been given for this service to be put on offer.

In addition there was the development of in-house management systems for serials handling and several of these are now operational, though not all have yet been fully developed. The most important ones so far reported are briefly noted below.

(a) BALLOTS[3] (University of California, Los Angeles, U.S.A.). This installation at the Biomedical Library at Irvine UCLA was one of the first to be developed and has served as a model for many other systems.

(b) EASY[12] (GHB, Essen, FDR). This was started in 1976 and was reported at a Conference on Current Trends in Serials Automation held here in 1980. A summary of its characteristics is given in the proceedings of that conference. It is part of a comprehensive library automation system and one feature of interest is the distinction made between periodicals and monographic series.

(c) NOTIS[13] (Northwestern University, Evanston, USA). This is an integrated comprehensive library system which includes serials handling as well as monographic accessions, cataloguing and circulation. It has two major components: firstly searching for information and secondly managing the collection of library materials. It runs on an IBM 4331 mainframe and has a multi-key access to the bibliographic file of monographs and serials. It is offered as a system for use in other libraries.

(d) OSCAR[14] (University of Oxford, U.K.). This was also reported at the Essen Conference. The emphasis in this development has been on cost-effectiveness, and this system which operates on a

shared mini-computer is very close to repaying its cost in performance and efficiency.

(e) PEKOS[15] (ETH, Zurich, Switzerland). This has been under development since 1975 and in 1980 was providing the following facilities on-line: periodicals check-in, claiming missing issues and identification of complete volumes for binding. The system is to be enhanced over a five year period to 1985 and will form part of a new integrated library system operating on a dedicated computer instead of the former CDC machine in the University computer centre.

(f) RAMAS[16] (Royal Institute of Technology Library, Stockholm, Sweden). This is an automated library management system which includes a periodicals control sub-system with multi-key access to the bibliographic record. It is similar to OSCAR in design philosophy with all sub-records such as holdings data, source of supply and publication dates linked to the main record by a unique record number. RAMAS is run on a PDP 11/34 minicomputer with a core store of 256 kilobytes.

(g) UBCLCS[17] (University of British Columbia Library Computer-based Systems). This system has been developed as part of a comprehensive automated library processing and data retrieval system for the whole campus of the university. Originally developed on an IBM 1401 it was transferred to a Honeywell 200 system in 1979. The on-line serials system was developed from an on-line enquiry facility directed to the catalogue and housekeeping activities have been added subsequently.

This summary is by no means exhaustive. Details of other centres where there are operational systems can be found in the report of the Intermarc Software-Subgroup Seminar 3 held at Lausanne in 1980. [21] The situation in North America is well summarized by Taylor in a report published in 1982. [22]

3. Subscription Agencies

An interesting recent development in serials automation has been the offer of on-line access to a periodicals database by some subscription agencies. Faxon (Westwood U.S.A.) were the first to offer information from their database in 1977. [18] Initially the information was provided in batch mode and was restricted to financial analyses but has since been extended to cover a wide range of facilities.

The Swets Corporation in the Netherlands has developed a fully-automated check-in and delivery system, FAST, for serials. [19] It was developed in co-operation with the American National Libraries of Agriculture and Medicine, and it is operated from two main centres at Lisse in the Netherlands and Berwyn (Pennsylvania) in U.S.A. The serials management data are supplied in monthly listings to customers. Plans have been made for on-line access to selected libraries.

Blackwells have recently announced the periodicals management system PERLINE and the first customer, UKAEA at Risley in U.K., is now receiving delivery of the software.[20] Recommended hardware is the LSI-11 microprocessor built by Hoskyns, but it can run also on DEC PDP11 mini-computer systems.

4. A User Survey

This brief summary shows the considerable variety of systems which may be considered by any interested periodicals librarian. It would seem that serials automation is now a standard facility in many university libraries in Europe and North America. In order to establish the extent to which IATUL member libraries have introduced serials automation it was decided to send out a postal enquiry to all members in time for the response to be analysed for this Conference.

(a) The response of the IATUL membership (Table 1)

A questionnaire was designed (see Appendix pp. 42) and sent out to 110 IATUL members. To date fifty-eight replies have been received and the response is shown analysed by region of the world in Table 1. Just over fifty percent of the membership responded and the ratio of enquiry to response was fairly constant throughout the seven regions except for North and South America, where the response was poor. These results alone are of interest to IATUL, and they indicate the extent to which the Association may be considered to be truly international.

(b) Size distribution of responding libraries (Table 2)

The number of current serial titles is one measure of the level of activity in a library and the frequency distribution for this parameter is shown in Table 2. It is seen that the majority of libraries are relatively small and over half of them have collections of less than five thousand current titles. The average collection for all libraries is 7,000 and eighty percent fall in the range 1,000 to 15,000.

(c) Analysis of types of catalogues (Table 3)

It is generally agreed that a machine-readable catalogue is an essential requirement before any serious work on serials automation can proceed. The analysis of types of catalogue in responding libraries is therefore of major significance. It would appear from these and subsequent data that 38 of the 58 libraries included in this analysis have some measure of serials automation functioning.

(d) Types of computer and installation dates (Table 4)

A large variety of computers was reported to be in use. The dates of installation shown in Table 4 indicate a significant number of libraries with relatively new installations with half

	ENQUIRIES	REPLIES
Pacific	6	3
Africa	9	7
Middle East	5	4
Europe (West)	63	36
Europe (East)	6	4
N. America	19	4
S. America	2	0
	110	58

Table 1. Response to questionnaire.

NUMBER OF CURRENT TITLES	FREQUENCY REPORTED
No figure specified	5
1- 5 000	30
5 001-10 000	12
10 001-15 000	4
15 001-20 000	2
20 001-25 000	1
25 001-30 000	1
30 001-35 000	0
35 001-40 000	2
40 001-45 000	0
45 001-50 000	0
50 001-55 000	1

Table 2. Distribution by size of current periodicals holdings.

TYPE OF CATALOGUE	FREQUENCY REPORTED
Machine readable	36 (+ 6 partially so)
Card	24
Micro-fiche	25
Guard book	4
Sheaf	0
Computer lists	11

Table 3. Analysis of periodicals catalogues.

Note: Some respondents have more than 1 of the listed types of catalogue.

YEAR	NO.
1972	1
1973	-
1974	-
1975	1
1976	3
1977	2
1978	1
1979	1
1980	8
1981	1
1982	7
1983	2
No date	11
Total	38

Table 4. Date of computer installation.

of those reported having been connected since 1980. The responses show that twenty-seven of the computer systems are shared and of these at least nine are co-operative systems such as BLCMP, OCLC or similar groups, and not all of these offer a serials package. The majority of dedicated systems are minicomputer-based, and there were only two reports of the use of microprocessors for serials handling. The range of types and manufacturers is too wide to merit a detailed analysis.

(e) Availability of automated processes (Table 5)

The extent of automation is shown in the analysis of automated processes in Table 5. Cataloguing is the most universal process being automated in all except two of the 38 libraries. This analysis shows eight libraries with a substantial range of automated processes and a further four with significant facilities beyond cataloguing. Several of the libraries reporting the use of financial control processes rely on subscription agencies for this function. It is interesting that the number of processes listed here are almost equally divided between batch and on-line facilities, very few libraries owning both.

(f) Correlation between extent of automation and size of current periodical collection (Figure 6)

The data plotted in Figure 6 show the number of automated facilities as a function of size of collection. The data have been divided into batch (figure 6a) and on-line (figure 6b) systems. There is no apparent relation between the two variables plotted and this is supported by the fact that the computed correlation coefficients are respectively - 0.18 and - 0.21 with a confidence level of 0.1. This result is believed to be of considerable importance since it tends to contradict the assertion that serials automation is more likely to be successful or cost-effective in a large library. If this assertion is true, it has not apparently been verified by experience. There is some evidence from the figures that small systems for small libraries may be more readily achieved.

5. Future Demand

The final part of the questionnaire dealt with the likely future demand for serials automation. The analysis of this aspect is summarized in Tables 7 to 10. The results are affected to a significant extent by the elimination of those libraries already included in the analysis above. The number responding is scarcely sufficient to justify detailed analysis, even though two-thirds of the twenty libraries with no automation would wish to introduce it if the expenditure were at the correct level. In respect of the latter there is some measure of agreement, as shown in Table 10, that capital expenditure should not exceed $ 15,000 and annual maintenance costs should be kept below $ 5,000. Computer manufacturers are unlikely to make significant profits here so there is no indication of a market waiting to be exploited.

Fig. 6a. DISTRIBUTION OF NUMBER OF AUTOMATED PROCESSES BY SIZE OF CURRENT PERIODICALS HOLDINGS — BATCH

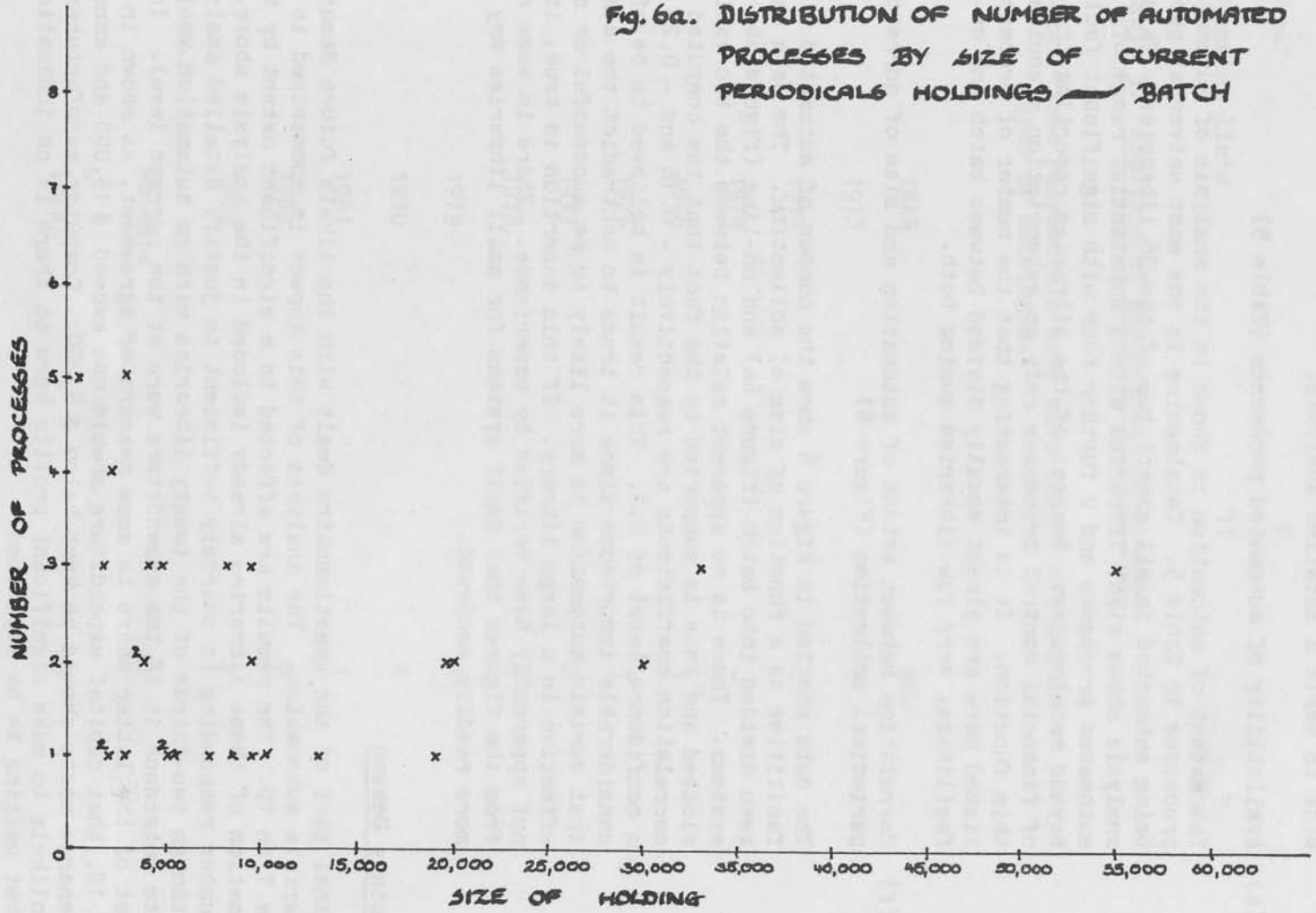
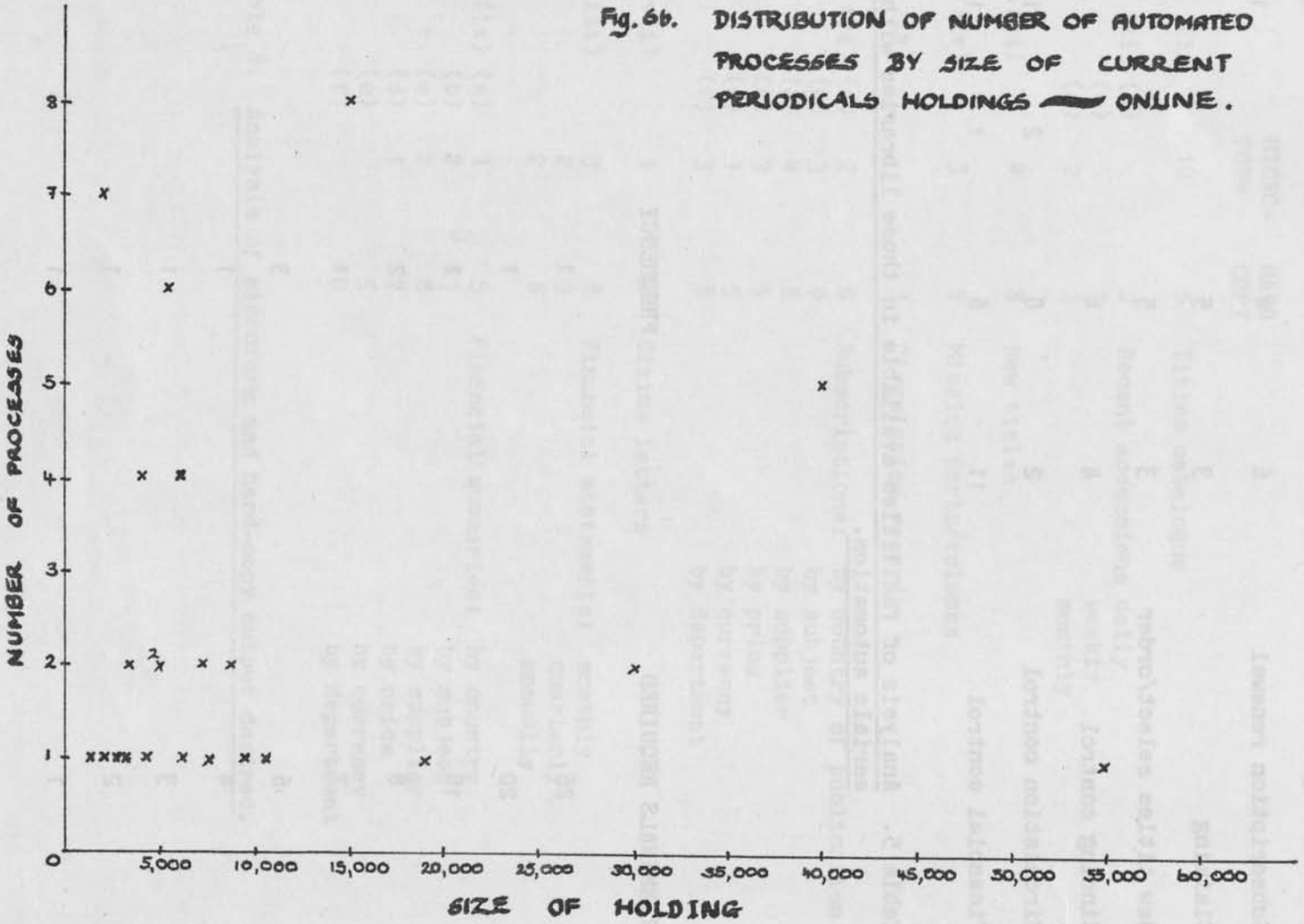


Fig. 6b. DISTRIBUTION OF NUMBER OF AUTOMATED PROCESSES BY SIZE OF CURRENT PERIODICALS HOLDINGS — ONLINE.



AUTOMATED PROCESS	AVAILABILITY			
	Batch only	On-line only	Both batch and on-line	Total
Registration/Check in	5	6		11
Cataloguing	16	16	4	36
Subscription renewal	6	4		10
Claiming	3	5		8
New titles select/order	3	5		8
Binding control	4	4		8
Circulation control	2	8	2	12
Financial control	11	6	1	18

Table 5. Analysis of facilities available in those libraries with serials automation.

TERMINALS REQUIRED	FREQUENCY
26	1
20	1
18	1
8	2
7	1
6	3
4	1
3	1
2	1
1	1

Table 7. Distribution of numbers of computer terminals required.

		MICRO-FORM	HARD COPY		
(i)		10	5	Titles catalogue	
(ii)	(a)		2	Recent accessions	daily
	(b)		2		weekly
	(c)	2	2		monthly
(iii)		4	8	New titles	
(iv)		3	9	Missing parts/volumes	
(v)			3	Circulation records	
(vi)	(a)	2	6	Subscriptions:	by country of publication
	(b)	3	9		by subject
	(c)	4	8		by supplier
	(d)	3	5		by price
	(e)	1	5		by currency
	(f)	3	8		by department
(vii)		1	10	Claims letters	
(viii)		3	8	Financial statements:	monthly
		2	5		quarterly
		2	6		annually
(ix)	(a)	1	5	Financial summaries:	by country
	(b)	2	11		by subject
	(c)	2	8		by supplier
	(d)	1	7		by price
	(e)		5		by currency
	(f)		10		by department

Table 8. Analysis of microform and hard-copy output desired.

NO. OF TERMINALS	FREQUENCY
1-3	5
4-6	3
7-9	2
10-12	2
13-15	0
16-18	1
19-21	1
21-24	0
25-27	1
28-30	0
31-33	0
34-36	1

Table 9. Demand for service to be offered to branch libraries.

ANNUAL EXPENDITURE*		CAPITAL EXPENDITURE* NOT GREATER THAN 5 000	15 000	50 000	150 000	TOTAL
NOT GREATER THAN	1 500	2	2			4
	5 000		4	1		5
	15 000		1	1		2
	50 000					
GREATER THAN 50 000					2	2
Total		2	7	2	2	13

Table 10. Capital expenditure and annual maintenance charges anticipated.

*Note: All figures in US dollars.

6. Conclusion

The extent to which serials handling processes have been automated in the libraries of IATUL members is now significant. There is no apparent correlation between the number of processes automated and the size of the serials collection. However, the existence of a machine-readable catalogue is an essential starting point and libraries not yet automated but looking towards achieving this should note the substantial workload required in producing, in-house, a database dictionary of serials titles and holdings. There are four options available for those now considering serials automation.

The first and easiest to implement is to take the service from a subscription agent. In this case the entries for the machine-readable catalogue will probably be found in the agent's database. It is likely that a working system could be achieved in a relatively short time, but it will probably be expensive to operate. Furthermore, the service is at present limited to areas where there are good data communications, and the cost of data transmission to and from the host computer may be a major expenditure. There is clearly a need to develop cheaper methods of data transfer.

An alternative to this is to join a library co-operative system which has established serials handling processes available to members. The growth in this area is slow and probably results from the need to adapt the library procedures to match those on offer.

Thirdly, the example of those libraries which have developed in-house systems may be followed. The development cost is substantial and will be unlikely to be recovered in a few years from cost savings. There is considerable scope here for inter-library co-operation.

Finally, the development of networks of interconnected microcomputer systems promises to overcome many of the disadvantages of the larger centrally-operated systems. It is not yet possible to store locally the whole of a large database and operating system such as is needed for a collection of (say) 10,000 current titles. However, the technology is available and developments taking place could lead to a suitable system within a year or less from now. There is considerable scope here to develop a software package for basic processes of serials management and the response to the questionnaire indicates a likely market within IATUL.

7. Acknowledgements

The authors are grateful to the 58 IATUL members who responded to the questionnaire and thus made the analysis possible. The production of this conference paper is thus a result of international co-operation between libraries such as IATUL exists to foster. The authors are grateful to Mr. P.J.R. Warren for his advice and criticism; also to Mrs. Jean Bridges who laid out the questionnaire and Mrs. Vibeke Cranfield who tranformed our scribbled notes into a camera-ready copy. The latter

task was carried out on the RSL word-processor which is a benefit provided by Computer Technology Limited on whose CTL 8046 minicomputer OSCAR is available for demonstration to visitors.

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APPENDIX

10th IATUL Conference on
"THE FUTURE OF SERIALS, PUBLICATION AUTOMATION AND MANAGEMENT".

Essen 6-10 June 1983

Questionnaire on Serials Automation

A. Name of Library .....

B. Name of respondent .....

C. Description of collection

Subject(s) .....

No. of current serial titles .....

Annual intake .....items
(see note 1 sheet 4)

D. Serials Catalogue

Form of catalogue: card ☐ microfiche ☐ guard book ☐

sheaf ☐ other ☐ .....specify what

E. Is your catalogue in machine-readable form? Yes/No

F. Do you have any serials automation in your library? Yes/No

If answer to F is Yes please turn to page 2 and answer G,H, and I as appropriate.

If answer to F is No please turn to page 3 and answer J,K,L,and M as appropriate

To be returned to Dr. Dennis Shaw. C.B.E.
Keeper of Scientific Books,
Radcliffe Science Library,
Parks Road,
OXFORD OX1 3PQ
United Kingdom.

Brief description of serials automation system at .....

.....

.....Library

G. The following processes are automated (tick boxes or insert details as appropriate).

	batch	on-line
registration/check-in	☐	☐
cataloguing	☐	☐
subscription renewal	☐	☐
claiming	☐	☐
new titles selection/ordering	☐	☐
binding control	☐	☐
circulation control	☐	☐
financial control	☐	☐

H. Specification of computer system

mainframe manufacturer ..... model .....

dedicated/shared ..... maxi/mini/micro .....

on-line access ..... batch.....

no. of terminals (i) VDU .....(ii) other .....

storage capacity: core ..... kilobytes

disk, fixed ..... kilobytes, exchangeable ..... kilobytes

floppy ..... kilobytes

magtape: cartridge/spool ..... kilobytes

I. Date present system installed .....

Capital cost .....Annual maintenance cost .....

J. # EITHER: I do not wish to have an automated serials system for my library. (Reasons explained on a separate sheet).

OR: I would like an automated serials system for my library with the following equipment and capabilities:-

(# delete whichever does not apply and if appropriate continue to answer questions K,L and M below).

K. My requirements for serials automation include the following:

on-line access for staff ☐ insert number of terminals required

for readers ☐

letter quality printer ☐

output microform *.....

output hardcopy *.....

*Select from list in note 2 and indicate which lists are required in each format microform/hard copy.

L. I am prepared to pay for such a system

Capital cost	US $	tick
not more than	5,000	☐
not more than	15,000	☐
not more than	50,000	☐
not more than	150,000	☐
more than	150,000	☐
any other limit please state here		☐
Annual running costs (excluding staff)		
not more than	1,500	☐
not more than	5,000	☐
not more than	15,000	☐
not more than	50,000	☐
more than	50,000	☐
any other limit please state here		☐

M. I would like the system to cover (number).....branch and departmental libraries as well as the main library.

Note 1. Please estimate total number of individual items received each year. The following each count as one item:
a bound volume
an unbound volume
a separate index

Note 2. Select from the following list in answer to K and insert numbers as appropriate. e.g. (i), (ii), (iii), (iv), (v), (vi)a, (vi)b, etc.

(i) titles catalogue

(ii) (a) recent accessions daily
(b) recent accessions weekly
(c) recent accessions monthly

(iii) new titles

(iv) missing parts/volumes

(v) circulation records

(vi) subscriptions (a) by country of publication (d) by price
(b) by subject (e) by currency
(c) by supplier (f) by department

(vii) claims letters

(viii) financial statements monthly/quarterly/annually

(ix) financial summaries (a) by country (d) by price
(b) by subject (e) by currency
(c) by supplier (f) by department

(x) any other - please specify.